CLAIMS

1. A fluid delivery apparatus for introducing a flowable cooling media to a skin surface, comprising:

a template including a skin interface surface;

an energy delivery device coupled to the template;

a flowable cooling media introduction member coupled to the template; and

resources to controllably deliver energy from the energy delivery device to the skin surface.

2. The apparatus of claim 1, wherein the resources are configured to controllably deliver the flowable cooling media to the introduction member.

3. The apparatus of claim 2, further comprising:

a sensor coupled to the resources and to the skin surface.

4. The apparatus of claim 1, further comprising:

a sensor coupled to the resources and to the skin surface.

5. The apparatus of claim 4, wherein the sensor is a thermal sensor.

6. The apparatus of claim 4, wherein the sensor is a temperature sensor.

7. The apparatus of claim 1, wherein the resources provides a pulsed delivery of energy from the energy delivery device.

8. The apparatus of claim 4, wherein the resources includes a feedback control.

9. The apparatus of claim 1, wherein the resources provides a controlled delivery of energy to the skin surface that does not exceed exceeding 1000 joules/cm2 during a single delivery of energy.

10. The apparatus of claim 1, wherein the resources provides a controlled dose rate of energy to the skin surface of no more than 10 joules/sec/cm2.

11. The apparatus of claim 1, wherein the resources provides a controlled delivery of electromagnetic energy to a skin surface to operate in an impedance range at the skin surface of 70 ohms cm2 measured at a frequency of 88 Hz to 40 Kohms cm2 measured at a frequency of 10 KHz.

12. The apparatus of claim 1, wherein the energy delivery device produces electromagnetic energy and the resources adjusts a frequency of the electromagnetic energy to correspond to a selected temperature at the skin surface.

13. The apparatus of claim 12, wherein the resources provides a controlled delivery of electromagnetic energy to operate in a range of thermal conductivity at a skin surface of 0.2 to 1.2 W/(mEC).

14. The apparatus of claim 1, wherein the energy delivery device is an RF electrode and the resources provides a controlled delivery of energy to operate with a frequency modulation of 250 KHz to 4 MHz.

15. The apparatus of claim 1, wherein the energy delivery device is a dielectric heating delivery device and the resources provides a controlled delivery of in the range of 4 MHz to 60 MHz.

16. The apparatus of claim 1, wherein the energy delivery device is a microwave antenna and the resources provides a controlled delivery of energy in the range of 915 MHz to 2,450 MHz.

17. The apparatus of claim 1, wherein the resources includes:

an energy control signal generator that generates an energy control signal to control energy supplied from an energy source to the energy delivery device; and

a temperature measurement circuitry coupled to the energy delivery device and configured to measure a temperature of a selected site at the skin surface.

a impedance measuring circuitry coupled to the energy delivery device and configured to measure an impedance of one of a selected site at the skin surface or the energy delivery device.

18. The apparatus of claim 17, wherein the impedance measuring circuitry determines a minimum impedance value to determine a target measurement value as a function of the minimum measurement value and compares the measured measurement values to the target measurement value and alter the control signal when said measured measurement value exceeds the target measurement value.

19. The apparatus of claim 17, further comprising:

an energy source configured to supply energy to the energy delivery device,

wherein the energy source is responsive to the control signal to supply energy to the energy delivery device.

20. The apparatus of claim 17, wherein the temperature measuring circuitry comprises:

a first device for determining the minimum temperature value;

a target determining device coupled to the first device configured to determine the target temperature value as a function of the minimum temperature value; and

a first comparison device for comparing measured temperature values to the target temperature value and generating a signal indicating whether the measured temperature value exceeds the target temperature value.

21. The apparatus of claim 17, wherein the temperature measurement circuitry includes a microprocessor controller.

22. The apparatus of claim 1, wherein the resources includes:

an energy control signal generator that generates an energy control signal to control energy supplied from an energy source to the energy delivery device; and

an impedance measurement circuitry coupled to the energy delivery device and configured to measure one of a impedance of a selected site at the skin surface or the energy delivery device .

23. The apparatus of claim 22, wherein the impedance measuring circuitry determines a minimum impedance value to determine a target measurement value as a function of the minimum measurement value and compares the measured measurement values to the target measurement value and alter the control signal when said measured

measurement value exceeds the target measurement value.

24. The apparatus of claim 22, further comprising:

an energy source coupled to the energy delivery device and configured to supply energy to the energy delivery device, wherein the energy source is responsive to the control signal to supply energy to the energy delivery device.

25. The apparatus of claim 22, wherein the impedance measuring circuitry comprises:

a first device for determining the minimum impedance value;

a target determining device coupled to the first device configured to determine the target impedance value as a function of the minimum impedance value; and

a first comparison device for comparing measured impedance values to the target impedance value and generating a signal indicating whether the measured impedance value exceeds the target impedance value.

26. The apparatus of claim 22, wherein the impedance measurement circuitry includes a microprocessor controller.

27. The apparatus of claim 1, wherein the resources includes:

a flow rate signal generator that generates a flow rate control signal to control cooling media supplied from a cooling media source to the flowable cooling media introduction member; and

a flow rate measurement circuitry coupled to the flowable cooling media introduction member and configured to measure a flow rate of the cooling media at the skin surface.

28. The apparatus of claim 27, wherein the flow rate measurement circuitry determines a minimum flow rate value to determine a target measurement value as a function of the minimum measurement value and compares the measured measurement values to the target measurement value and alter the flow rate control signal when said measured measurement value exceeds the target measurement value.

29. The apparatus of claim 27, further comprising:

a cooling media source coupled to the flowable cooling media introduction member, wherein the energy media source is responsive to the flow rate control signal to supply cooling media to the cooling media introduction member.

30. The apparatus of claim 27, wherein the flow rate measuring circuitry comprises:

a first device for determining the minimum flow rate value;

a target determining device coupled to the first device configured to determine the target flow rate value as a function of the minimum flow rate value; and

a first comparison device for comparing measured flow rate values to the target flow rate value and generating a signal indicating whether the measured flow rate value exceeds the target flow rate value.

31. The apparatus of claim 27, wherein the flow rate measurement circuitry includes a microprocessor controller.